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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,550	02/06/2002	Tohei Moritani	MTV-038.01	6977

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EXAMINER

NAFF, DAVID M

ART UNIT	PAPER NUMBER
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1651

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/068,550

Applicant(s)

MORITANI ET AL.

Examiner

David M. Naff

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/13/02</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claims examined on the merits are 1-17, which are all claims in the application.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6, 8 and 12-17 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the monomer of claim 7 and, when preparing a gel or polymer network, by copolymerizing the monomer with N-isopropylacrylamide, does not reasonably provide enablement for another monomer having the function of that of claim 7, and for a copolymer other than the monomer of claim 7 copolymerized with N-isopropylacrylamide. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The specification provides an enabling disclosure for producing only the monomer of claim 7 that functions as an imprinter as disclosed. No other specific monomer is described

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in combination with a working example of how the monomer is synthesized. It would be speculation and unpredictable as how to synthesize another monomer that will function as an imprinter in the same way as the monomer of claim 7. Additionally, the specification provides no enabling working description of how to prepare a polymer gel or polymer network other than by copolymerizing the monomer of claim 7 with N-isopropylacrylamide. How to prepare another gel or network that has the characteristics of that when copolymerizing the monomer of claim 7 with N-isopropylacrylamide would be merely speculation, and would require an undue amount of further experimentation.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 2 of claim 1, "imprinter" is uncertain as to meaning and scope. It is suggested that --- molecular --- be inserted before "imprinter".

In line 3 of claim 1, and where recited in other claims, "functional groups" is uncertain as to meaning and scope. Being functional is relative and subjective when the function is not specified. The function of the functional groups should be set forth.

Claim 1 is further unclear by requiring treating the gel polymer with a reagent that breaks a covalent bond in the tether without requiring the tether to contain a breakable covalent bond.

In claims 5, 8 and 10, reciting "without using a template" is confusing since it is uncertain how a template differs from the imprinter which inherently functions as a template.

Claim 7 and 8 are unclear by requiring the polymer of claim 5 since claim 5 is drawn to a method.

Claim 9 is unclear by requiring a polymer network prepared by the method of claim 7 since claim 7 is drawn to a monomer instead of a method.

Claims 12-17 are unclear as to what would be a separation material and sensor without requiring any structure and function of the separation material and sensor. Being a separation

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material or sensor is relative and subjective in the absence of structure and function relating to the structure.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 8, 12, 13, 15 and 16 are rejected under 35 U.S.C. 102(b or e) as being anticipated by Ruckenstein et al (AF on 1449) or Ruckenstein et al (6,323,360).

The claims require a monomer having two or more polymerizable double bonds, two or more functional groups and a breakable covalent bond that links the functional groups

Ruckenstein et al disclose a breakable cross-linker (Figure 1) that is ethylene glycol di(1-methacryloyloxy)ethyl ether. This monomer has two polymerizable double bonds, two functional groups and a covalent bond breakable by hydrolysis

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linking the functional groups. The monomer is copolymerized to form a block copolymer, and the monomer is hydrolyzed to form a linear polymer. See page 3979, under "Introduction".

The monomer and copolymer of Ruckerstein et al are encompassed by the present claims and are the same as claimed. The monomer will inherently be an imprinter in the copolymer of Ruckenstein et al.

Claim Rejections - 35 USC § 103

Claims 1-5, 8, 12, 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipskier (5,841,493), Domb (5,858,296), Singh et al (6,248,842 B1), Mosbach et al (6,316,235 B1) or Tanaka et al (5,801,221) in view of Ruckenstein et al (AF) or Ruckenstein et al (6,323,360).

The invention and Ruckenstein et al are described above.

Lipskier, Domb, Mosbach et al and Tanaka et al disclose molecular imprinted polymers prepared using a cross-linker and an imprint molecule.

Singh et al disclose a cross-linked chelating polymer produced by substituting an acyclic chelating agent with a polymerizable functional group, complexing the substituted chelating agent with a metal ion, adding a cross-linking monomer, and removing the metal ion to provide a cross-linked polymeric chelating agent templated for the metal ion.

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It would have been obvious to use as a cross-linker to prepare the polymer of Lipskier, Domb, Singh et al, Mosbach et al or Tanaka et al the breakable cross-linker of Ruckenstein et al (AF) or Ruckenstein et al (6,323,360) for its expected function of being capable of being broken after the polymer is formed to form a linear polymer. After breaking, an imprinted polymer will be inherently obtained. Since the resulting polymer can bind a molecule for which it is imprinted, the polymer can be considered a separation material and sensor.

Conclusion

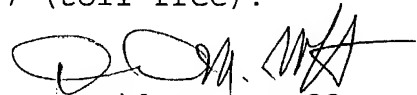
Claims 6, 7, 9, 10, 11, 14 and 17 are free of the prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David M. Naff whose telephone number is 571-272-0920. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David M. Naff
Primary Examiner
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DMN
9/3/04